

**Agency of Natural Resources
Department of Environmental Conservation
Watershed Management Division
1 National Life Drive, Davis 3**

MEMORANDUM

To: Ed Hathaway (EPA)
John Schmeltzer (VDEC)

From: Biomonitoring and Aquatic Studies Section (BASS), VDEC

Date: June 14, 2022

Subject: Aquatic Biota Impairment of Streams Draining Pike Hill Copper Mine

In Corinth, Vermont, runoff from the Eureka and Union mines drain into Pike Hill Brook, while runoff from the smaller Smith Mine drains into an unnamed tributary (Trib #4) to Cookville Brook. The drainage from the mines at Pike Hill includes mine influenced waters with low pH and elevated levels of metals. These in-stream conditions cause an impairment of the macroinvertebrate and fish communities in Pike Hill Brook.

Streams draining the Pike Hill mines were placed on the US EPA National Priorities List in 2004 due to severe ecological impacts to the Pike Hill Brook and Cookville Brook watersheds. Both streams continue to be listed as impaired in the 2022 303d Part A List of Impaired Waters. At Pike Hill Brook, the uses impaired are aesthetics and aquatic life support and the pollutant is described as high metal concentrations in drainage from the abandoned Pike Hill mine and tailings. Additionally, Cookville Brook Trib #4 from river mile 1.0 to 1.7 is impaired for the use of aquatic life support due to metals from acid mine drainage associated with Pike Hill mine.

Pike Hill Brook:

Pike Hill Brook is impaired over its entire length based on macroinvertebrate and fish community assessments (see spreadsheet entitled: *Pike Hill Mine BASS Bio and Site Summary*). The upper reaches from river mile 2.1 to the stream's origin at the Pike Hill mine site is in *Poor* condition for both macroinvertebrates and fish. The macroinvertebrate community is extremely low in abundance and taxa, and the stream is virtually fishless. The lower reaches of Pike Hill Brook are slightly improved but remain in *Poor-Fair* condition. Within lower gradient reaches, such as river mile 1.4 and 0.9, moderately tolerant macroinvertebrate taxa are present in higher abundances, as are tolerant fish species. Within the higher gradient reaches from river mile 0.4 down to river mile 0.1, minor recovery of the macroinvertebrate and fish community is evident, but the communities still fail to meet VDEC biocriteria, with overall macroinvertebrate and

Brook Trout abundance somewhat depressed. Sampling at river mile 0.4 was performed in 2017, density and EPT richness were higher than previous sample events in 2005 and 2007, but the sample still failed to meet biocriteria.

Cookville Brook Trib:

Cookville Brook Trib #4 is impaired from immediately downstream of the copper mine discharge for approximately a half mile. The biological community was sampled at river mile 1.7 in 2007 and 2017; both sample events had very low overall density, richness, and EPT richness.

Waits River:

Two sites have been sampled on the Waits River in Corinth, one above and one below the confluence with Pike Hill Brook. All sampling has been assessed as Very Good or Excellent. Biological sampling has not been performed in this area since 2005.